Claims

1. A method for blind transport format detection, the method comprising the steps of:

receiving an over-the-air signal comprising a plurality of transport channels multiplexed onto the over-the-air signal, wherein each of the plurality of transport channels comprises a plurality of transport formats;

determining a plurality of Cyclic Redundancy Check (CRC) metrics for each of the transport channels and a first transport format;

determining a transport format combination metric based on the plurality of CRC metrics; and

determining a transport format based on the transport format combination metric.

2. The method of claim 1 wherein the step of receiving the over-the-air signal comprising the plurality of transport channels multiplexed onto the over-the-air signal, wherein each of the plurality of transport channels comprises the plurality of transport formats comprises the step of receiving the over-the-air signal comprising the plurality of transport channels multiplexed onto the over-the-air signal, wherein each of the plurality of transport channels comprises the plurality of transport formats, wherein the plurality of transport formats has a particular bit rate.

3. The method of claim 1 wherein the step of determining the transport format combination metric based on the plurality of CRC metrics comprises the step of determining $\hat{k} = \arg\max_{k \in \{1,2,\cdots,K\}} \left\{ \sum_{i=1}^{I} p_i CRC_i^k \right\}$, wherein $p_i \in \{24,16,12,8,0\}$ and CRC_i^k equals to 1 if a TTI frame under hypothesis TF_i^k for an ith transport channel passes a CRC check; and CRC_i^k equals to 0 if the TTI frame under hypothesis TF_i^k fails the CRC check or a CRC result is not available.

4. The method of claim 1 wherein the step of determining the transport format combination metric based on the plurality of CRC metrics comprises the step of determining $\hat{k} = \arg\max_{k\in\{1,2,\cdots,K\}} \left\{ \sum_{i=1}^{I} \left(\left(p_i + \ln\frac{1-e_i^k}{e_i^k} \right) CRC_i^k + \ln e_i^k \right) \right\}$, wherein $p_i \in \{24,16,12,8,0\}$ and CRC_i^k equals to 1 if a TTI frame under hypothesis TF_i^k for an ith transport channel passes a CRC check; and CRC_i^k equals to 0 if the TTI frame under hypothesis TF_i^k fails the CRC check or a CRC result is not available.

5. The method of claim 1 wherein the step of determining the transport format based on the transport format combination metric comprises the step of determining the transport format, wherein the transport format utilized corresponds to the transport format having a largest transport format combination metric.

6. A method for blind transport format detection, the method comprising the steps of:

(a) receiving an over-the air signal comprising I data (transport) channels;

(b) determining I Cyclic Redundancy Check (CRC) metrics for the I data channels;

(c) determining a transport format combination metric for the I data channels based on the CRC metrics for the I data channels;

(d) repeating steps b-c for each possible transport format combination; and

(e) determining a transport format combination corresponding to a largest transport format combination metric.

7. The method of claim 6 wherein the step of receiving the over-the-air signal comprising I data (transport) channels comprises the step of receiving the over-the-air signal comprising I transport channels, wherein each of the I transport channels comprises a plurality of transport formats.

8. The method of claim 6 wherein the step of determining the transport format combination metric based on the CRC metrics comprises the step of determining $\hat{k} = \arg\max_{k\in\{1,2,\cdots,K\}}\left\{\sum_{i=1}^{I} p_i CRC_i^k\right\}$, wherein $p_i \in \{24,16,12,8,0\}$ and CRC_i^k equals to 1 if a TTI frame under hypothesis TF_i^k for an ith transport channel passes a CRC check; and CRC_i^k equals to 0 if the TTI frame under hypothesis TF_i^k fails the CRC check or a CRC result is not available.

9. The method of claim 6 wherein the step of determining the transport format combination metric based on the CRC metrics comprises the step of determining $\hat{k} = \arg\max_{k\in\{1,2,\cdots,K\}}\left\{\sum_{i=1}^{I}\left(\left(p_i + \ln\frac{1-e_i^k}{e_i^k}\right)CRC_i^k + \ln e_i^k\right)\right\}$, wherein $p_i \in \{24,16,12,8,0\}$ and CRC_i^k equals to 1 if a TTI frame under hypothesis TF_i^k for an ith transport channel passes a CRC check; and CRC_i^k equals to 0 if the TTI frame under hypothesis TF_i^k fails the CRC check or a CRC result is not available.

10. An apparatus comprising:

a de-multiplexer having a data stream as an input, wherein the data stream comprises a plurality of transport channels, each having a plurality of transport channel formats, the de-multiplexer outputting a plurality of channels based on a particular transport format combination;

a plurality of Cyclic Redundancy Checking (CRC) circuitry, each having one of the plurality of channels as an input and outputting a CRC for the channel; and

a logic unit having a plurality of CRC values as an input and outputting a transport format combination metric based on the plurality of CRC values.

11. The apparatus of claim 10 further comprising storage outputting data based on a transport format combination corresponding to a largest transport format combination metric.

12. The apparatus of claim 10 wherein the transport format combination metric is based on $\hat{k} = \arg\max_{k\in\{1,2,\cdots,K\}} \left\{ \sum_{i=1}^{I} p_i CRC_i^k \right\}$, wherein $p_i \in \{24,16,12,8,0\}$ and CRC_i^k equals to 1 if a TTI frame under hypothesis TF_i^k for an ith transport channel passes a CRC check; and CRC_i^k equals to 0 if the TTI frame under hypothesis TF_i^k fails the CRC check or a CRC result is not available.

13. The apparatus of claim 10 wherein the transport format combination metric is based on $\hat{k} = \arg\max_{k\in\{1,2,\cdots,K\}} \left\{ \sum_{i=1}^{I} \left(\left(p_i + \ln \frac{1-e_i^k}{e_i^k} \right) CRC_i^k + \ln e_i^k \right) \right\}$, wherein $p_i \in \{24,16,12,8,0\}$ and CRC_i^k equals to 1 if a TTI frame under hypothesis TF_i^k for an ith transport channel passes a CRC check; and CRC_i^k equals to 0 if the TTI frame under hypothesis TF_i^k fails the CRC check or a CRC result is not available.